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Dedication ceremony: After delivering the keynote address at the Nov. 22 athletic complex dedication ceremony, Howard Cosell is given a remembrance of his visit to WU. Student-athletes Kathy Fagan and Ted Lucas present the sweatshirt to the ABC-TV sports commentator, who in his speech earlier, commended WU's NCAA Division III program that recognizes a healthy mix between academia and athletics. Fagan, former captain of the tennis team and current co-captain of the women's basketball team, and Lucas, a four-year letterman and co-captain of this year's football team, also cut the ribbon commemorating the official dedication of the \$13 million athletic complex. Other dedication events included a student dance and party that evening in Francis Gymnasium, followed by two basketball games in the new Field House: WU Alumni vs. St. Louis University Alumni and WU Bears vs. St. Louis University Billikens. The Bears put up a strong fight, but the Billikens won 66-50.

Professor strives for safer aircraft design through revolutionary engineering technique

□ On Aug. 12, 1985, Japan Air Lines Flight 123 slammed headlong into a mountainside northwest of Tokyo, killing all but four of the 524 passengers on board. Preliminary investigations indicate that failure of a structural component caused the accident.

□ On Oct. 11, 1985, McDonnell Douglas Corp. announced that cracks could develop in bulkheads connecting the wings to the fuselage of its newest fighter aircraft, the F-18. Experts blame an engineering defect.

Modern aircraft are as vulnerable as they are incredibly sophisticated. Failure of a single structural element can cause disaster. Yet the methods engineers use to evaluate structural components in aircraft are based on concepts pioneered almost 30 years ago.

Until recently, these methods represented the best available technology, says Barna Szabo, Ph.D., director of WU's Center for Computational Mechanics. But a significant breakthrough in computer-aided design techniques will radically alter the way engineers evaluate aircraft designs of the future, he says.

During the last 15 years, Szabo has developed PROBE, an engineering program he believes will result in more efficient engineering and safer aircraft for the 1990s.

"In a test problem of an L-shaped corner, for example," he explains, "conventional technology must solve about seven million equations to reach a solution accurate to

within one percent relative error. PROBE can do it with 800 equations. If it takes PROBE one minute to solve this problem, then conventional programs would need 200 years on the same computer."

Of course no one has 200 years to solve a problem. Instead, engineers settle for lower-quality solutions. "The result," Szabo continues, "is that engineers spend more time and effort, more resources, and use more expensive computers to design a final product that ends up more expensive and more difficult to maintain."

Using the finite element techniques, engineers calculate stress dis-

tribution on a physical object by dividing the object into a screen-like mesh of small sections called finite elements. Each element is mathematically modeled with approximating functions to represent stresses in the object.

To increase precision, conventional meshes often contain thousands of tiny elements. Because each element requires complicated processing, solution of a complex problem calls for substantial computer resources. Engineers spend about 80 percent of their time producing intricate mesh designs and interpreting vast amounts of data, says Szabo.

As an alternative, Szabo increased the mathematical sophistication of the approximating functions describing each element. As a result, he needed far fewer elements to accurately model the entire object.

"At first they said it could never work," he smiles. As little as five years ago, critics hinted that Szabo's theories were nothing more than computerized black magic.

But in scientific papers published in 1981 and again in 1984, Szabo and Iva Babuska, an internationally recognized mathematician at the University of Maryland, provided rigorous mathematical proof that not only does PROBE perform better than existing technology, but if applied in a certain way, will approach the theoretical optimum performance achievable. "In other words," Szabo observes, "if a supreme being were to design a finite element program, it



Barna Szabo

Continued on p. 3

WU hosts soccer national final, basketball tourney

National championship

A WU first will take place at 1 p.m. Sunday, Dec. 8, when the 21-2 soccer Bears host the University of North Carolina-Greensboro for this year's NCAA Division III national championship. WU has never been the site of a national final for any sport, although the Bears did play in the 1978 national soccer championship in Babson Park, Mass., against Lock Haven College, Pa.

The Bears won a school record 21st game of the season by upending Glassboro State College of Glassboro, N.J., 2-1, in a national semifinal on Sunday, Nov. 24. Freshman Mike DeSantis of Boston, Mass., scored WU's first goal of the game, before senior John Brill of Columbia, Md., earned the game-winner with 23 minutes remaining in the contest.

UNC-Greensboro, the 1982 and '83 Division III national champions, are coached by Mike Parker, who guided Lock Haven to the 1978 championship by beating the Bears. The Greensboro Spartans are 19-5.

Since the start of the national tournament, WU has beaten Wheaton, ranked number two in the nation; UC-San Diego, ranked number seven; Glassboro State, ranked number eight; and Ohio Wesleyan, ranked number nine. The Bears finished the season ranked 13th in the country.

Tickets for the game can be purchased in advance by calling 889-5220 before 4 p.m. Friday, Dec. 6. Only 500 tickets at \$4 per person will be sold in advance for this national championship event. All WU students will be admitted free with their ID card.

Lopata Classic

For the second consecutive year, four of the nation's top academic institutions will meet in St. Louis to compete in WU's Lopata Men's Basketball Classic on Friday and Saturday, Dec. 6-7. Entrants in this year's "Brain Bowl" include Trinity University of San Antonio, Texas; Claremont-Mudd-Scripps Colleges of Claremont, Calif.; Johns Hopkins University of Baltimore, Md.; and WU, the 1984 tournament champion.

Tournament action begins at 6 p.m. on Friday, Dec. 6, with Trinity facing Claremont-Mudd-Scripps, followed by a rematch of last year's championship, Johns Hopkins vs. WU, at 8 p.m. Saturday's schedule has the consolation game set for 6 p.m. and the championship contest at 8 p.m.

The Bears captured the first Lopata title last year with a 72-64 victory over the Blue Jays of Johns Hopkins. The consolation championship saw MIT defeat Caltech 71-46, marking the first time the two "academic powers" had ever met in varsity basketball.



Bountiful harvest: On a recent Saturday morning, 45 WU students harvested more than 200 bushels of turnips and mustard greens that were given away later that day to needy people in north St. Louis. The students, who are involved in the Inter-Varsity Christian Fellowship, had heard a talk on local hunger and decided to do what they could to help alleviate the problem. A farmer in West County volunteered his crop, which covered an area about the size of a football field. Otis Woodard, who distributes food, clothing and money to the needy through the Lutheran Family and Children's Services, handled the distribution of the harvest from a truck outside his home. Among the turnip and mustard green pickers were (above, from left) Tim Williams, a sophomore in engineering; Adam Smith, a master's degree candidate in civil engineering; and Ian Brockie, a doctoral candidate in chemistry.

Kirby receives first Grimm traveling fellowship

William C. Kirby, Ph.D., assistant professor of history and director of the International Affairs Program, has received the first Roland Grimm Traveling Fellowship from the University. Grimm, a 1914 alumnus of the University, died in 1983.

The fellowship was established to support WU faculty research in Asia. Grimm, who was 89 when he died, was a sales representative in the Orient for about 40 years. The University also is naming its squash, handball and racquetball courts in the new athletic complex in his memory.

Kirby said the grant will support his research in Chinese archives for a book titled *The International Development of China Since 1928*. He is focusing on patterns of Chinese-foreign economic and technical cooperation under both Nationalist and Communist rule. He started the research in 1984 under a fellowship in Chinese studies from the American Council of Learned Societies.

The author of *Germany and Republican China* (Stanford University Press, 1984), Kirby joined the WU faculty in 1980. As director of the International Affairs Program in University College since 1983, he coordinates an interdisciplinary curriculum for students who travel and do business abroad.

During the past eight years, he has been a visiting research associate at the modern history institutes of the Chinese Academy of Social Sciences in Beijing and the Academia Sinica in Taipei.

Kirby earned his bachelor's degree in history, summa cum laude, from Dartmouth College in 1972. After a year of graduate studies in history and political science at the Freie Universitaet in Berlin, he completed his master's degree in 1974 and doctorate in 1981 in history at Harvard University. He was a teaching fellow at Harvard from 1975 to 1979.

Law library essential to legal scholars

Janis R. Powell, a second-year WU law student, would be lost without it.

WU law student Doug McCloskey spends approximately 10 hours each day in it, taking only occasional breaks for renewed energy via the facility's nerve center, the snack room.

"It" is the Eugene A. and Adlyne Freund Law Library on the first and second floors of the Seeley G. Mudd Law Building.

Like many WU law students, Powell uses the library to do research, write briefs and prepare legal memorandums. Because of her tight schedule, she appreciates the convenience the library provides by offering comprehensive and accessible information to law scholars.

"I have no love for roaming through stacks," admits the 40-year-old Powell. "I don't have any time. I have a family that includes three girls, ages 8, 11 and 13. I don't have the option of staying at the library from 8 in the morning until 8 at night.

"I study in work units," continues Powell. "I complete a law school project and then pick up a child from piano lessons. I finish another assignment and do a load of laundry. I have to get my work done efficiently.

"Everything is available at the law library — that's what I appreciate the most," Powell says. "If something has been written, it's in the law library. When you're running on a work schedule, that comprehensive coverage makes a difference."

"Grades are essential to obtaining a good job in law," comments McCloskey, who, besides being a second-year law student, is a husband

and father of two-and-a-half-year-old Ben. "There are two ways to get good grades: be a genius or work very hard. To play it safe, I work very hard." In addition to his library studies, he hits the books at home for two hours each weekday.

The law library is popular for several reasons, according to McCloskey. It's convenient; students can obtain input from their peers on complex law issues; and, of course, the library has "many resources that are extremely useful" to students, faculty and the St. Louis area law community.

The site boasts a large research collection of more than 310,000 volumes. It has source materials to help scholars find anything from specific law cases to statistics that support arguments.

The library also has opinions of various federal and state courts; briefs from the U.S. and Missouri Supreme Courts; numerous federal and Missouri statutes and regulations; law review articles; and legal treatises, which are comprehensive summaries of the law. Freund library is one of the few academic facilities nationwide that contains all of the administrative agency codes and regulations for the 50 states.

To help library users with their inquiries, Peggy McDermott, assistant law librarian for reference services, teaches students and faculty how to use the computer-based Lexis and Westlaw legal research systems. By using these online data bases, operators rapidly can find cases by plugging particular words, phrases or legal citations into the computer. In addition, they can retrieve administrative decisions made by federal

agencies and examine cases heard by specific judges.

The Lexis and Westlaw data bases are part of a new revolution in processing legal information. Although WU's law library still has traditional law books on most of its shelves, technology increasingly is being emphasized to quickly provide resources to researchers, says Bernard D. Reams Jr., J.D., Ph.D., professor of law and director of the law library.

In the future, predicts Reams, the majority of legal information will be transmitted through laser or optical disks, which store massive amounts of information on a disk the size of a 12-inch phonograph record. Reams recently purchased the library's first optical disk unit, which indexes legal periodicals. He and his staff are considering acquiring another laser disk system that indexes federal government publications.

In another use of technology, the acquisitions department has completed a book catalog of the library's monographs collected during the last five years by using a specific computer program to compile the information.

"We are anticipating future trends," Reams remarks. "Today we rely on microforms to store masses of legal information, tomorrow it will be the laser disk."

The computer wave has influenced the way law students produce their assignments as well. Reams estimates that approximately 35 percent of the school's 650 students own personal computers and use them in their legal studies.

Carolyn Sanford

RECORD

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Student's string piece scores international prize

This article is part of a continuing monthly series profiling WU students.

George Chave, a doctoral candidate in WU's department of music, decided to compose an entry for the Oriana Trio International Composition Competition because he needed a string piece to round out his portfolio. "I thought I'd kill two birds with one stone," says the 26-year-old composer from Skaneateles, N.Y.

In August, Chave received word that he had completed his portfolio with a winning composition. His "Trio for Violin, Cello and Piano" won first prize out of a field of more than 40 pieces from eight countries. He will receive a \$1,500 prize when the piece is premiered by the Oriana Trio in Kenosha, Wis., this week.



George Chave

Chave got the good news Aug. 1, just three days before his wedding. "I was glad to receive the results before the big day," he says. "Between the wedding and moving, it might have taken a long time for the announcement to catch up with me."

In addition to the cash prize, Chave will gain some other benefits from his success. Not the least of which, he says, is a professional quality recording of the December performance. Chave had been concerned about the cost of getting a quality recording of his work, a must for a composer seeking a teaching position.

The Oriana Trio is a resident ensemble of the University of Wisconsin — Parkside, in Kenosha. The eight-year-old trio performs frequently in the Midwest and has toured the United States. Its members are James McKeever, piano; Priscilla Jones, cello; and Ali Forough, violin.

"Chave's trio was an especially well-crafted piece," says McKeever. "It has a great deal of rhythmic vitality."

Robert Wykes, D.M.A., has been Chave's principal teacher at WU. He described Chave as "an extremely well-organized composer."

Wykes says the entire music department will benefit from Chave's success. Winners of the Oriana competition get perpetual publicity. Each year, the competition's brochure lists all previous winners and their musi-

cal affiliation at the time of their win. "Having WU mentioned in a brochure that is distributed internationally will no doubt add luster to the reputation of the School of Music," he says.

Chave's trio will become part of the Oriana Trio's regular repertoire. They will continue to play his work in their local performances and on tour, giving him a virtual guarantee that his music is played. "And getting played is one of the basic goals of any composer," he says.

Chave received his bachelor's degree in piano performance with a minor in composition from Syracuse University. "I had an unrealistic dream of being a great concert pianist," he says. "I did my graduate work in composition and theory to make myself more marketable as a teacher."

After receiving his master's degree in composition from the State University of New York in Binghamton, N.Y., Chave chose WU for his doctoral work because of the diversity of the composition faculty. Each of the four composers on the faculty was trained in a different school of composition.

The size of the graduate music program at WU also attracted him. "Many prestigious schools have so many students, it's impossible to get the individual training a musician needs," he says. "WU's music department has a fine reputation and a small enough class that all students get individual attention."

Chave's compositions contrast greatly with much contemporary, "minimalist" music, which he says is repetitive and lacks movement. "Music should be forward-going," he says. "It should have a drive and a direction."

Chave's own direction, after he receives his doctoral degree in the spring, also is forward-going. He hopes to find a teaching position in an urban area and continue writing music. He is hoping to find a publisher for his trio. "Having won this competition won't hurt at all," says the composer.

Laurie Navar

Aircraft safety—

continued from p. 1

could perform a little better than PROBE. But not much."

PROBE's rigorous mathematical foundation allows it to tackle problems that have eluded conventional technology, making it attractive to the aerospace industry, a critical user of finite element technology.

"We have created a tool that lets engineers do more creative engineering," proclaims James A. Flowers, president of Noetic Technologies, the company formed to develop and market PROBE. "The bonus is that the answers are better. Not only will it give you the answer, but it is the only program in existence that is able to tell you how good the answer is," says Flowers.

Szabo believes that new designs will be possible with the aid of the powerful engineering tool. "Undoubtedly, PROBE will have significant impact on the performance and safety of aerospace structures."

Robert Brock



Edison will be the site of the Guthrie Theater's production of "Great Expectations." The orphan boy Pip (played by Timothy Wahrer) falls in love with the heartless Estella (Ann-Sara Matthews), who spurns Pip's love.

Edison has Dickens' 'Great Expectations'

Edison Theatre will present the Guthrie Theater performing "Great Expectations" at 8 p.m. Friday, Dec. 13.

Barbara Fields adapted Charles Dickens' story for the company's 1985-86 tour. "Great Expectations" is set within the squalor and turbulence of Victorian England. It tells the story of Pip, an orphan, and his journey from rags to riches. Along the way, he encounters a starving convict, Abel Magwitch; a bitter spinster, Miss Havisham; her beautiful but cruel daughter, Estella, who spurns Pip's love; and assorted other characters who influence him.

When a mysterious benefactor offers to pay Pip's way to gentrification, he travels to London in hopes of becoming a gentleman and winning Estella's love. He is trained in society manners by Herbert Pocket, a London dandy. In the end, the mysterious benefactor is revealed and Pip comes to terms with himself and Estella.

The Guthrie Theater, now in its 23rd season, is one of the nation's foremost regional theaters. Since 1980, the Guthrie has been under the artistic direction of Liviu Ciulei, Romanian stage and screen director, actor, designer and architect.

Ciulei has an international reputation as an adventurous director. He made his U.S. directorial debut in 1974 with the American premier of George Buechner's "Leonce and Lena."

His European credits include "As You Like It" in Romania and West Germany and "Leonce and Lena" in Romania and Scotland. At the Guthrie, he has staged "The Tempest," "As You Like It," "Twelfth Night," "The Three Sisters," "Eve of Retire-

ment," "The Threepenny Opera," "Requiem for a Nun" and the critically acclaimed "Peer Gynt."

In recognition of its outstanding contribution to American theater, the Guthrie was presented the Tony Award in 1983 by the American Theater Wing and the League of New York Theaters and Producers. The award was recommended by the American Theater Critics Association.

Tickets for the performance are \$15 to the general public, \$10 to WU faculty and staff and senior citizens and \$7 to students. For tickets, call the box office at 889-6543.

This program is made possible by support from the IBM Corporation, the Missouri Arts Council and the National Endowment for the Arts, through their participation in Mid-America Arts Alliance, a regional arts organization.

Intramural office holds racquetball tournament

The WU Intramural Office of the Athletic Complex is sponsoring a continuing racquetball tournament for faculty and staff. The tournament format will be ladder-type competition, with players challenging higher-ranked opponents to obtain their positions on the ladder.

Players of all skill levels are encouraged to enter this ongoing tournament and entries will be taken at any time (no entry deadline) in the intramural office. Complete tournament rules also are available in the office. For more information, call 889-5193.

MEDICAL RECORD

Physical therapist gives warning on 'feeling the burn'

Americans are taking to gyms and tracks with a vigor that will surely make physical fitness a major lifestyle change of the late 20th century. But our penchant for push-ups and other traditional calisthenics gives some of us more than we bargained for — pain. We often react by falling off the exercise bandwagon.

Help is on the way. Enter Shirley Sahrman, Ph.D., a neurobiologist and physical therapist at WU School of Medicine. Sahrman has spent years treating men and women who believe the slogan, "no pain, no gain." "That's a myth," she says simply.

Sahrman warns that particular exercises may be inappropriate for certain body types, weights and ages. An avid believer in the benefits of exercise, she deplores the intensity and inherent imbalance in many popular calisthenics-type exercise regimens.

Many routines overemphasize abdomen-flattening exercises, she says. They promise to strengthen abdominal muscles by lots of sit-ups, but they don't provide any counterbalancing exercise.

Counterbalancing exercises are necessary because the body operates according to the laws of physiology. Every action or movement is accomplished by certain muscle groups contracting while other muscle groups relax. These opposing actions make movement possible. But if the muscles that contract during a certain movement become overtightened (too short) from overuse, problems arise, most commonly pain and distorted posture.

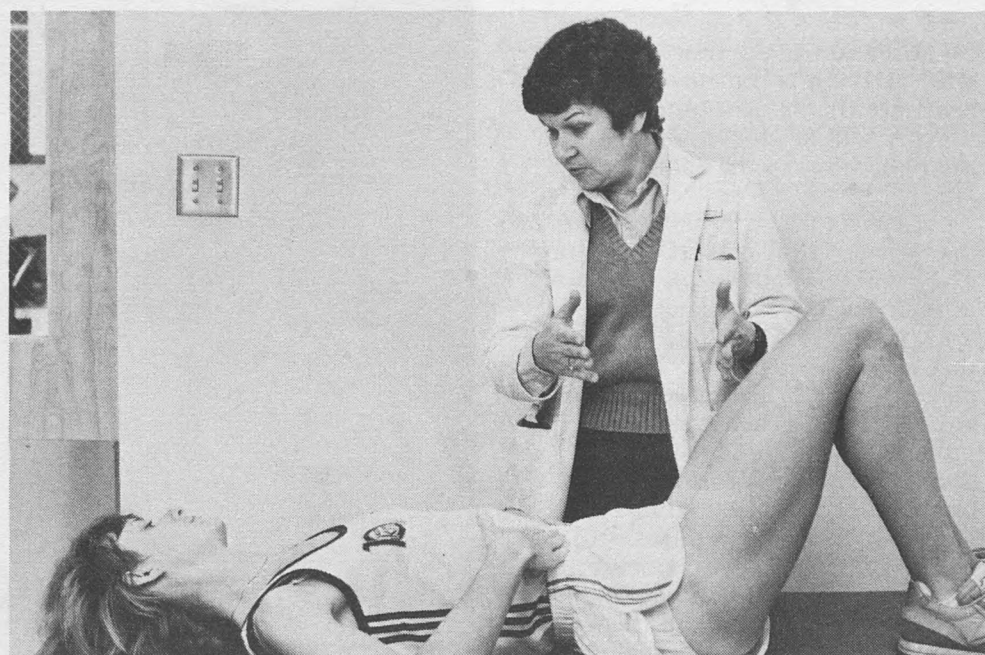
Any type of calisthenics — leg lifts, arm curls, etc. — needs to be counterbalanced by exercise that induces movement in the opposite direction. For example, you can counterbalance sit-ups by standing against a wall with head and shoulders back, arms overhead. Other exercises should also be done lying face down to strengthen back and hip muscles.

Sahrman didn't set out to malign sit-ups, but they're just not the best way to strengthen a sagging abdomen, she says.

The abdomen is encased in layers of muscles. To stop sag, the broad sheets that comprise one of the outermost muscle layers — the external obliques — should be strengthened. (The external obliques are sometimes called the "lower abdominals" because they exert the most control over the pelvis and thus the lower abdomen.) But instead of engaging the lower abdominals, sit-ups strengthen and shorten an inner muscle — the internal oblique — and the outermost, ribbon-like layer of muscle — the rectus abdominis — that extends from the center of the pelvis to the breastbone.

Most body-conscious people, however, don't know physiology. They undertake a self-prescribed program of more sit-ups to remedy the problem of a protruding abdomen.

Sit-ups also tend to pull the head forward and put the upper spine in faulty alignment, creating neck problems and a forward-thrusting head "which most people tend to have already," says Sahrman. Doing sit-ups from a shortened position is also a problem: "This tends to depress the



Shirley Sahrman, Ph.D., WU neurobiologist and physical therapist, instructs runner Jennifer Shifrin on how to properly perform lower abdominal exercises.

chest by making the abdominal muscles, particularly the rectus abdominis, too short. And it neglects the lower abdominals, while over-strengthening the rectus, so that you don't even accomplish what you're after — a strong abdomen."

Sahrman suggests a progressive program of exercises to correct lower abdominal muscle imbalances that make for sagging stomachs. The series involves keeping the trunk still and moving only the legs. Diagrams of these exercises are available from Sahrman by calling 362-2381.

If you're surprised at Sahrman's indictment of sit-ups, you're not alone. Linda, a 29-year-old scientist, was shocked to learn that her nine-year habit of sit-ups had aggravated

her upper back pain. "I started doing a lot of sit-ups when I was in college, usually three times a week, 20 to 30 at a time. I learned early on that putting my hands behind my head, like you're supposed to do for a sit-up, made my neck hurt. So instead I rested my hands on my stomach while doing trunk curls in a bent-knee position.

"But I developed such pain in my upper back that it would wake me up at night. The doctor then told me it was stress, and I was studying a lot. But I was also leaning over — bent over a quilt I was working on, or reading, or peering into a microscope — and doing lots of activities with outstretched arms. Only swimming relieved my pain."

Other doctors told Linda that her problem was weak abdominals. Strengthen them with sit-ups, they recommended. Not until she consulted Sahrman did Linda learn that her "good sit-ups" (trunk curls) were having some bad effects.

"Linda has forward shoulders and a depressed chest," says Sahrman. "Her rectus abdominis is shortened from too many trunk curls, and sit-ups have pulled her chest down and head forward. Her lower abdominal muscles are not as well developed as they should be because the rectus is so strong."

To correct these imbalances, Sahrman advised Linda to cease sit-ups, trunk curls and leg lifts. A new exercise regimen developed by Sahrman will stretch Linda's too-short rectus and help get her head back, as well as promote proper shoulder positioning.

Although swimming helped Linda, Sahrman says it is not an ideal exercise: "It's true that the buoyancy of water can help alleviate some of the shock delivered to joints. But to assume that you will adequately strengthen everything just because you're doing this full-body exercise in water is not true. Swimming may keep you from inducing further problems, but it doesn't correct existing ones."

"I think it's wonderful that people are trying to exercise," continues Sahrman. "To be healthy, they need to. For women, preliminary studies are showing that exercise helps prevent osteoporosis, or brittle bones. But people have to get to the point where they can tolerate strenuous exercise."

Suzanne Hagan

Get physical with these risk-reduced exercise tips

To make strenuous exercise easier, Sahrman has some tips to share.

First, consult an exercise physiologist or physical therapist to evaluate your posture for any inherent weaknesses and to help you avoid exercises that would aggravate them. You'll be tested for spinal alignment, shoulder girdle function, and hyperextended knees.

Once you know what postural quirks you have, you'll want to structure your exercise regimen accordingly. For example, resistive-type exercises (weights) to strengthen the shoulder girdle can cause problems, especially for women. "It's very difficult for a woman to do them safely," advises Sahrman. "They have to be careful not to put their shoulders forward. And they should start off with light weights, increasing resistance very slowly."

Persons with forward-pointing shoulders should avoid any exercises involving a lot of forward arm waving or swinging. Instead, while standing flat against a wall with feet about three inches away from the wall, they should raise their arms overhead and bring their shoulder blades back and down. Those with back problems or a flat back (not enough curve) should avoid exercises that have them bending forward. Knock knees will be aggravated by hip-flexing exercises; substitute those that

have movement originating in the gluteal (buttocks) area.

"Undertake a balanced program so that you don't have too much of any one activity," suggests Sahrman. If you're participating in a particular sport, know what specific imbalances that sport can cause. For example, bicycling can tighten the hip flexors. Swimming can contribute to forward shoulders.

"Aerobic-type exercises produce the real health benefit," says Sahrman. "But if you want to strengthen or tone muscles, ask what calisthenics or general exercises will counteract muscle imbalances induced by these sports."

Most sports participants or vigorous calisthenics enthusiasts believe that stretching, as either a warmup or cooldown, is helpful. Yet Sahrman cautions that a lot of bad advice, or lack of advice altogether, is causing people more harm than good.

"One thing that's missing from the exercise books I'm familiar with is, where is the end point of a stretch? People know to stretch their hamstrings, but to what point do you stretch them? The same with heel cord stretches. Everybody leans against a wall to stretch their heel cords. To what degree should you go to achieve a certain range at your ankle?"

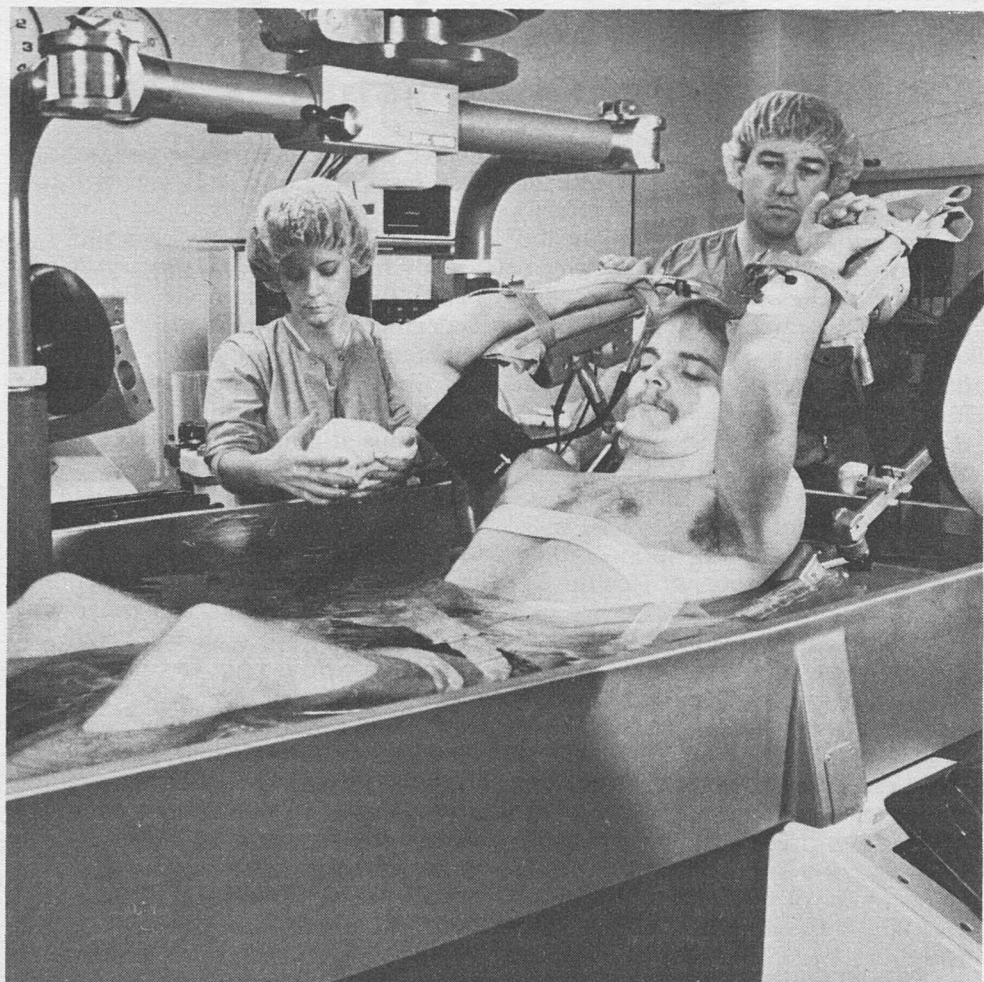
She points out that many people, especially those with a flat back, end up stretching their back — not their hamstrings — if they do hamstring stretches leaning over. To prevent this, she advises stretching while seated. Sitting up straight, not slouched or leaning forward, straighten out the leg at the knee without tilting the pelvis. You should be able to extend your leg in a straight line, perpendicular with your trunk, to achieve adequate stretch.

Heel cords can also be stretched from a sitting position. With leg extended, point the toe toward the knee, then flex the foot about 10 degrees. "If your ankle changes from 90 degrees to about 80," she advises, "you probably have adequate heel cord length."

Progress slowly, Sahrman concludes. "If muscle soreness lasts beyond a day or two, you've done too much. Be realistic about what you're bringing to the exercise class. If you're overweight and haven't done any exercises for a long time, I'd go very slowly rather than trying to get up to pace in a week or so."

"Even if you get your aerobic fitness up in a week or two, your muscular system takes longer. That's what's important for long-term participation."

Suzanne Hagan



Stone crusher: Marsha Helms (left), assistant head nurse in Barnes Hospital's West Pavilion operating room; and Darrel Newkirk, CRNA, team coordinator for genitourinary anesthesia; demonstrate the lithotripter — a machine that provides a noninvasive shock wave method of eliminating kidney stones. Bob Endicott, West Pavilion operating room manager, acted as the patient during the recent demonstration for local media. The lithotripter is located in the Midwest Stone Institute at Barnes Hospital, a sponsoring institution of the WU Medical Center. Ralph V. Clayman, M.D., is medical director of the institute and associate professor of urologic surgery at the School of Medicine. More than 13,000 patients have received lithotripsy treatments worldwide. Studies show that about 79 percent of the patients had their stones eradicated with one treatment.

Local diabetics needed for national study

WU School of Medicine is seeking people with insulin-dependent diabetes to participate in one of the largest and most important studies of the disease ever performed.

Volunteers are needed for the Diabetes Control and Complications Trial (DCCT), a seven-year study that will include 1,100-1,200 participants. WU is one of 21 medical centers across North America helping to conduct the research, funded by the National Institute of Arthritis, Diabetes and Digestive and Kidney Diseases, part of the National Institutes of Health.

The DCCT is designed to answer one of the most important remaining questions about diabetes: how effective are some of the newer forms of diabetes therapy at preventing, delaying or reversing the presence of diabetic complications? These complications may affect the eyes, kidney, nerves, heart and blood vessels.

"Even in people who control their diabetes, the complications can cause serious health problems," says Julio Santiago, M.D., one of the local study directors. "The relationship between blood sugar control and diabetic complications is an extremely important issue. The outcome of the DCCT will have a major impact on the treatment of diabetes in the future."

Santiago — and study co-directors Neil White, M.D., and Don Skor, M.D. — are looking for individuals with type 1, or insulin-dependent, diabetes. Participants must be between the ages of 13 and 39, and must have had type 1 diabetes for at least one but not more than 15 years. They cannot be taking more than two insulin injections per day, be using an insulin pump, or have any severe complications from diabetes.

Volunteers in the study will receive free medical care from diabetes specialists at WU School of Medicine for the next seven years. To volunteer, or to get further information, contact Lucy Levandoski, Santiago or White at 454-6051.

At WU Santiago is professor of pediatrics and associate professor of medicine, and White is assistant professor of pediatrics and instructor of medicine. Both are on staff at Barnes and Children's hospitals, sponsoring institutions of the WU Medical Center. Skor is clinical instructor of medicine at WU, and on staff at Barnes and Jewish hospitals. Levandoski is a physician assistant.

Bedell honored by dental alumni association

Robert E. Bedell, D.D.S., has received the 1985 Distinguished Alumnus Award from the WU Dental Alumni Association.

The award was presented to Bedell, a Kirkwood orthodontist, at a recent banquet concluding the 119th annual meeting of the association. He was chosen as recipient of the award by an anonymous committee of his fellow dental alumni.

Bedell received his dental degree from WU in 1944 and the master of science degree in orthodontics in 1951. He was honored for his long service to the School of Dental Medicine as teacher, alumni leader and fundraiser, and for his prominence in national and regional orthodontic activities.

Bedell taught at the School of Dental Medicine from 1944-51 and from 1958-82. He is a long-time member of the Dental Alumni Association board of directors and served as president of the association in 1978. A member of WU's William Greenleaf Eliot Society since 1970, he has helped seek contributions to the School of Dental Medicine and presently serves on the School's Capital Resources Committee.

In 1979, Bedell was the recipient of the Distinguished Service Scroll of the American Association of Orthodontists (AAO). He has held various offices with the AAO, the Greater St. Louis Dental Society and the Missouri Dental Association. He served as president of the Midwestern Society of Orthodontists in 1983-84 and continues as a member of the society's board of directors. He has served for many years as orthodontist for the Missouri School for the Blind.

Ludmerer writes book on medical education

Sweeping transformations in the training of American doctors are chronicled in a new book by Kenneth M. Ludmerer, M.D., a physician/historian at WU School of Medicine.

Learning to Heal: The Development of American Medical Education has been scheduled to be published by Basic Books, Inc., a division of Harper & Row. It is Ludmerer's second book; the first, *Genetics and American Society*, was published in 1972 and was selected in 1973 by the Saturday Review as one of the year's ten outstanding books on scientific subjects.

Learning to Heal, already reviewed by one critic as a "stunning achievement," examines the progression of medical education in the United States.

A century ago, says Ludmerer, entrance requirements to medical school were less stringent than they were to a good high school. "Instruction was superficial and brief," he says. "The terms lasted only 16 weeks, and after the second term, the M.D. degree was automatically given, regardless of a student's academic performance." Instructors were private practitioners who taught during their spare time.

All that has changed. As Ludmerer points out, medical education underwent a metamorphosis, during which medical training became institutionalized, with university-based medical schools allying with hospitals to form academic medical centers. Students go through years of rigorous training, combining classroom experience with practical experience in the lab and with the pa-



Kenneth M. Ludmerer, M.D., WU physician/historian, has chronicled changes in the training of American doctors in his new book, *Learning to Heal: The Development of American Medical Education*.

tient. Instructors have doctoral degrees; some are required to hold faculty positions in order to be on the staff of a teaching hospital. Money from the government and philanthropists helps fund research and supports the best clinical settings.

Ludmerer, 38, visited 30 cities over nine years researching archival records for *Learning to Heal*. He is a graduate of the Johns Hopkins Medical School (the first university-based medical school in this country) and also received a master's degree in history from that institution. He majored in history and science as an undergraduate at Harvard University.

At WU Ludmerer holds joint academic appointments in the School of Medicine and the Department of His-

tory. From 1980-83, he was a teaching and research scholar of the American College of Physicians and was one of the first recipients of a five-year, \$50,000 scholar's grant established by the Henry J. Kaiser Family Foundation.

Since 1977, he has been a book reviewer and manuscript referee for a dozen medical and historical publications, including the *Bulletin of the History of Medicine*, the *Journal of the History of Medicine*, and the *British Journal for the History of Science*. He has lectured on medical education and the American medical profession to groups at several universities, including Harvard and Johns Hopkins.

MEDICAL RECORD



Grand rounds: Luella Klein, M.D. (left), immediate past-president of the American College of Obstetrics and Gynecology and an expert on preventing unintended pregnancy, visited the WU School of Medicine recently to present a Grand Rounds conference on the subject. Diane F. Merritt, M.D., director of pediatric and adolescent gynecology for the School of Medicine, invited Klein on behalf of the Department of Obstetrics and Gynecology. Klein, who is also an authority on the prevention of low birth weight, is professor of gynecology and obstetrics at Emory University School of Medicine in Atlanta, Ga. She is also director of the Maternal and Infant Care Project and co-director of the Regional Perinatal Center, both at Grady Memorial Hospital in Atlanta.

Mosby Co., Times Mirror endow pathology laboratory

The C. V. Mosby Company and the Times Mirror Foundation have announced a \$100,000 gift to endow a pathology laboratory at WU School of Medicine.

The gift is presented as part of the ALLIANCE FOR WASHINGTON UNIVERSITY, a \$300 million program to provide support for the institution.

The funding will endow a pathology laboratory in the Clinical Sciences Research Building. Research in the laboratory is directed by department head Emil R. Unanue, M.D. Unanue is Edward Mallinckrodt Professor of Pathology at the School of Medicine and pathologist-in-chief at Barnes, Children's and Jewish hospitals, sponsoring institutions of the Medical Center.

An immunopathologist, Unanue has investigated interactions among immune system cells. He has been instrumental in showing the critical

role played by macrophages, cells which activate the body's immune response to foreign invaders. Macrophage interactions with other immune system cells are important in organ transplants and in the body's response to many disease states, especially infection and cancer.

The Times Mirror Foundation is the corporate foundation of Los Angeles-based Times Mirror, parent company of C. V. Mosby as well as television station KTVI, Channel 2, and The Sporting News Publishing Company, all in the St. Louis area. Times Mirror publishes the Los Angeles Times and seven additional newspapers, and has extensive other media holdings.

The C.V. Mosby Company publishes medical and health care books for students and professionals, and produces such electronic publications as educational software and test/review materials.

Coy named professor of restorative dentistry at School of Dental Medicine

Richard E. Coy, D.D.S., M.S., has been named professor of restorative dentistry at the WU School of Dental Medicine. Announcement of his appointment was made by George D. Selfridge, D.D.S., M.S., dean of the dental school.

Before joining WU, Coy was assistant dean for clinical affairs and professor of removable prosthodontics at the Southern Illinois University School of Dental Medicine. He served as assistant dean since 1977 and had been on the faculty since 1970.

Coy taught at the University of Pittsburgh School of Dental Medicine from 1961-70. He received his dental

degree from the University of Pittsburgh in 1951 and later earned a master's degree in prosthodontics from the same institution. He served as a dental assistant and hospital corpsman in the U.S. Navy during World War II and was a Naval dental officer from 1951-53.

Coy is 1985-86 president of The American Equilibration Society, a diplomate of the American Board of Prosthodontics, and a fellow of the American College of Dentists and the American College of Prosthodontics. He also is a member of Omicron Kappa Upsilon, the national dental honor society.

Medical school seeks volunteers for several cholesterol studies

Researchers at WU School of Medicine are seeking volunteers to participate in several studies on the effect of diet and medication on blood cholesterol.

The studies will be conducted by the Lipid Research Center, which spent 10 years as part of an unprecedented national study that proved lowered blood cholesterol levels can reduce the risk of heart disease. The St. Louis center, along with 11 other research centers, in January 1984 released results of the Coronary Primary Prevention Trial, sponsored by the National Institutes of Health (NIH).

Researchers at the School of Medicine are using the findings of that 10-year project as the foundation for further studies of the relationship between cholesterol and heart disease. The work will be directed, as before, by Gustav Schonfeld, M.D., director of the Lipid Research Center and acting head of the Department of Preventive Medicine and Public Health, and by Anne Carol Goldberg, M.D., instructor in preventive medicine and medicine.

The center is now screening volunteers for the studies, which will last five months. Participants will re-

ceive complete physicals, including lab tests, free of charge and will follow a set diet.

Among the projects is a diet study funded under a three-year, \$110,000 grant from the NIH. According to Schonfeld, an inherited protein defect that affects 25 percent of Americans is believed to make them more susceptible to cholesterol, and thus at a higher risk of cardiovascular disease.

This is the first study of its kind to examine the effect of diet on cholesterol levels in people with that trait. Researchers will screen volunteers aged 21-60 to select those who have the trait, as well as a group of controls who do not have the defective protein.

Two other studies will test new cholesterol-lowering drugs, one in liquid form and the other in capsule form. Researchers will use volunteers aged 21-70 to test for optimum dosage and long-term tolerance.

More information about any of the cholesterol studies is available from 1-4 p.m. weekdays at the Lipid Research Center (telephone 362-3500, 362-3501, 362-3502 and 362-3504).

Neurologists studying MS treatment

Researchers at WU School of Medicine need patients with multiple sclerosis (MS) as participants in a study of an immunosuppressive drug that may help victims of the disease.

Volunteers will be enrolled in the study through Dec. 9. The research, which began in 1984, examines the use of Cyclosporine A as a treatment for MS. WU is one of nine American universities conducting studies, sponsored by Sandoz, Inc. The local study is headed by John Trotter, M.D., director of the MS clinic and associate professor of neurology and neurological surgery at the School of Medicine.

MS is believed to be an autoimmune disease, Trotter says. Immunosuppressive drugs — critical to successful organ transplantation — have been helpful in treating progressive cases of MS, he notes, but cannot be used routinely because of potentially severe side effects.

Cyclosporine A — a relatively new immunosuppressant — has been proven to be more effective, with fewer and reversible side effects, than other drugs used for transplant patients, Trotter says. For that reason, it is being studied for its safety

and effectiveness as treatment for MS.

Patients will have blood tests and vital signs taken each month, with a formal examination by a neurologist and therapist every two months. Also, participants will be asked to have a spinal tap at the beginning and end of the trial. All testing will be conducted at the Clinical Research Center at the School of Medicine.

MS patients who have been treated with the immunosuppressive drug Cytoxan may not enter the trial. Participants must be off all immunosuppressive drugs for two months before they begin the study, and cannot begin taking other immunosuppressants during the trial.

Because the study is placebo controlled, not all patients will receive Cyclosporine A, Trotter says. If the drug is proven effective, however, all participants will receive it free until it gains federal approval as treatment for MS.

Further information about the MS study is available through Trotter at the Department of Neurology, telephone 362-3293.

Library introduces new search system

The WU School of Medicine Library, in conjunction with the Institute for Scientific Information in Philadelphia, has developed an online version of Current Contents, a major publication service for scientists and physicians.

The database includes citations to articles from the physical, life, clinical and agricultural sciences since January 1985. The system can be searched by title word, author or journal titles, and allows the searcher to save searches and run them at regular intervals. It is accessible through the library's Bibliographic

Access and Control System (BACS), and is available at no cost to all faculty, staff and students at the WU Medical Center.

This user-friendly search service can be accessed in the library or from remote locations, such as offices or laboratories using terminals or personal computers with dial-up capabilities and a 1200 baud modem.

Introductory seminars are offered every Thursday at noon and 3 p.m. Personal access codes are assigned at that time. For more information contact the reference division, 362-7085.

NOTABLES

Robert Blackburn, director of Community and Government Relations, was presented the annual Communication and Leadership Award at the Fall Conference of District 8, Toastmasters International.

John M. Fredrickson, M.D., chairman of the Department of Otolaryngology, was elected treasurer of the American Laryngological Society.

John Garganigo, Ph.D., professor of romance languages, recently discussed four papers on Latin American literature at the annual conference of the Midwest Association of North Colombianists. He is on a two-month lecture trip in Lima, Peru; Buenos Aires, Argentina; and Montevideo, Uruguay.

Yvonne Captain-Hidalgo, Ph.D., professor of Spanish, delivered a paper titled "Belief, an Evolving Constant in the Works of Manuel Zapata Olivella" at the annual Conference of the Midwest Association of Latin American Studies, held at the University of Missouri-Columbia in September.

Derek M. Hirst, Ph.D., professor of history, spoke on English puritanism and politics in 17th-century England Oct. 10 at the Folger Library Institute for the Study of Political Thought in Washington, D.C.

William C. Kirby, Ph.D., assistant professor of history, presented a paper on "China, the United States, and Postwar Economic Strategies, 1941-1948" to a conference on Sun Yat-sen and modern China, held Nov. 2-5 at the Sun Yat-sen University, Kaohsiung, Taiwan. On Nov. 16, at the invitation of New York University, he attended a planning conference for a collaborative book project on wartime China. On Dec. 9, he will address the World Affairs Council of St. Louis on "China: Potholes in the Capitalist Road?"

Stephen H. Legomsky, J.D., Ph.D., associate professor of law, has written a book titled *The Role of the Courts in Immigration Law: The United Kingdom and the United States* (working title). The book will be published by Oxford University Press.

Marilyn Maracle, a doctoral candidate in sociology, was a guest speaker at the SIU-Edwardsville Women for Women colloquium during Alcohol Awareness Week, Oct. 21-25. Her presentation was "Out of the Bottle — Women's Recovery from Addiction."

Ruth E. McDaniel, department administrator of the Department of Otolaryngology, was selected KEZK's (FM102) Business Person of the Week for Nov. 4-11. McDaniel was cited for her "outstanding achievements as department administrator," which include "organizing the first satellite office at the medical school and initiating a real-time computer system."

David W. McDonald, Ph.D., affiliate professor of technology management

in the Department of Engineering and Policy, has been named the representative from the School of Engineering and Applied Science to the planning committee for the National Innovation Workshop, to be held in St. Louis in May 1986. McDonald also has been appointed to the editorial board of *The Business Development Review*, a new journal sponsored by the Commercial Development Association.

James G. Miller, Ph.D., professor of physics and research associate professor of medicine, recently presented an invited paper, titled "Ultrasonic Characterization of Myocardium," at the Sixth Symposium on Echocardiography in Rotterdam, Netherlands. This research, which represents a collaborative effort with colleagues **Julio E. Perez**, M.D., assistant professor of medicine and assistant medical director of the Cardiac Diagnostic Laboratory, and **Burton E. Sobel**, M.D., Lewin Professor of Medicine and director of the Cardiovascular Division, is also the subject of an invited paper in the September/October 1985 edition of the journal *Progress in Cardiovascular Disease*.

Robert Permuter, manager of WU's Real Estate Properties Department, has been reappointed to serve on three national level committees of the National Institute of Real Estate Management for 1986. The committees are accredited resident-manager standards, asset manager and continuing and general education.

Mark R. Rank, Ph.D., assistant professor of sociology, presented a paper, titled "Length of Welfare Use Among Female-Headed Families: The Issue of Race Versus Opportunity," at the National Council on Family Relations annual meeting, held Nov. 6-9 in Dallas.

Martha Storandt, Ph.D., professor of psychology and neurology, was an invited speaker at a recent workshop on Early Diagnosis in Alzheimer's Disease, sponsored by the John Douglas French Foundation in Los Angeles. The topic of her presentation was "A Brief Neuropsychological Battery for Alzheimer's Disease."

J. Regan Thomas, M.D., assistant professor of otolaryngology, was elected vice president of the American Academy of Facial Plastic and Reconstructive Surgeons. Thomas will oversee the fellowship projects, educational activities, workshops and scientific programs of the association.

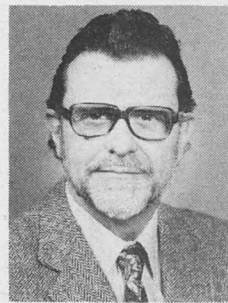
Have you done something noteworthy?

Have you: Presented a paper? Won an award? Been named to a committee or elected an officer of a professional organization? The *Washington University Record* will help spread the good news. Contributions regarding faculty and staff scholarly or professional activities are gladly accepted and encouraged. Send a brief note with your full name, highest earned degree, current title and department, along with a description of your noteworthy activity to Notables, Campus Box 1070. Please include a phone number where you can be reached.

Boccia exhibits paintings at three institutions

"My eyes are always on the masters and not on fashion — ever," says Edward E. Boccia, professor of art. "I'm not interested in fads or what goes on in galleries, but I've always been moved by the masters."

The influences of the masters — painters from the Italian Renaissance, Expressionism, Cubism and Surrealism — on Boccia's painting can be seen in a major exhibition of his work, "The Triptychs," to be held at three higher education institutions in St. Louis.



Edward E. Boccia

A triptych is a picture or carving on three side-by-side panels, often used as an altarpiece, with a central panel and two flanking panels half its size folding over it.

Oil on canvas triptychs will be exhibited Dec. 8 to Jan. 5 in WU's Gallery of Art in Steinberg Hall and St. Louis University Medical Center's Learning Resources Center in the Margaret McCormick Doisy Bldg., 3544 Caroline. Related sketches and drawings of the triptychs will be exhibited Dec. 1 to 21 in the Fontbonne College Library Gallery.

Boccia will present a slide lecture on his triptychs at 4:15 p.m. Tuesday, Dec. 10, in WU's Steinberg Auditorium in Steinberg Hall. He is being featured at 7:30 p.m. Wednesday, Dec. 4, on KETC-TV Channel 9's program, "St. Louis Skyline."

Sherrye Cohn, Ph.D., visiting assistant professor of art and archaeology at WU, has written an essay on the artist for the exhibit's illustrated catalog.

NASA honors Arvidson for service

Raymond E. Arvidson, Ph.D., professor of earth and planetary sciences, will receive a NASA Public Service Medal in an awards ceremony on Dec. 5 at the Jet Propulsion Laboratory in Pasadena, Calif.

Arvidson is being honored for his leadership role as chairman of the National Academy of Science Committee on Data Management and Computation and for his contributions as a member of numerous other NASA advisory groups dealing with the problems of space data management.

The Public Service Medal is one of 18 awards presented by NASA during 1985. It is given annually to a scientist from a private institution for exceptional contributions to NASA's space program.

Society of Physics Students honored

The WU chapter of the Society of Physics Students (SPS) has been designated one of the nation's "Outstanding SPS Chapters for 1984-85" by the National Society of Physics Students, a branch of the American Institute of Physics. Only 30 of the 527 SPS chapters nationwide received the honor.

Patrick C. Gibbons, Ph.D., associate professor of physics, is the advisor for the WU chapter, and

Boccia, who plans to retire from the School of Fine Arts in 1986 after 35 years of teaching, has included in the exhibit triptychs from as early in his career as 1956, and as late as 1985.

Throughout his career, his style has been most closely linked to the Expressionists, specifically Max Beckmann, who influenced Boccia in his use of the triptych form. In developing his present style, Boccia incorporates elements of painting styles associated with Picasso, Magritte and Cezanne, to name a few. Despite these influences, Boccia undoubtedly possesses his own style.

"My painting is mine," he says, "absolutely mine, in that no one else uses the language of painting the way I use it. No one else handles the human figure like I do."

In addition to his accomplishments as a painter, which include numerous one-person shows and paintings in hundreds of private and public collections throughout the United States and Europe, Boccia is a prolific poet.

Although he modestly considers himself a beginner, since 1981 he has taken prizes in local, national and international poetry contests, and has been published in journals such as *Webster Review*, *California Quarterly* and *Orbis*.

"I think my poetry is like my painting," Boccia says. "I didn't realize it at first, but I'm beginning to see it now. The similarity has to do with taking the figure apart and putting it back together differently. My poetry is like Cubism . . . like a collage. My poems are my feelings about life, belief, doubt, guilt and passion. These are the same things I paint about."

Elaine Dempsey

Managing voluminous streams of data — an inevitable consequence of the space age — is considered one of the greatest challenges facing researchers in the space sciences. Arvidson was instrumental in exposing serious deficiencies in existing methods of managing and distributing data from space missions.

His committee identified future requirements of the scientific community and proposed a series of solutions that will help handle effectively the tremendous increases in data NASA expects as research projects in space become more frequent. Under his leadership, the committee developed a set of innovative principles for the successful management and dissemination of scientific information from space.

Richard E. Norberg, Ph.D., is the chairman of the physics department.

The awards were originated in 1978 to give recognition for outstanding work in the promotion of physics. Selection of outstanding chapters is based on activities and lectures, membership, chapter projects, student papers presented at scientific meetings and physics awards granted to member students.

CALENDAR

Dec. 5-14

LECTURES

Thursday, Dec. 5

1:10 p.m. George Warren Brown School of Social Work Colloquium, "Social Work Licensing: Who Needs It?" Michael J. Rogers, central area manager for St. Louis County Child Mental Health Services, and Alice Windom, of St. Louis chapter, National Association of Black Social Workers. Brown Hall Lounge.

3:30 p.m. Center for the Study of American Business Regulatory Workshop Lecture, "On the Institutional Theory of Money," Rudolf Richter, professor, U. of Saarbrücken and visiting professor, U. of Mich. 300 Eliot.

4 p.m. Central Institute for the Deaf Research Seminar, "Clinical Performance of a Digital Hearing Aid," Gerald Popelka, clinical research scientist; A. Maynard Engebretson, senior research scientist; Robert Morley, research associate; Arthur Niemoeller, associate research scientist; and Arnold Heidebreder, design engineer. 2nd fl. aud., Clinics and Research Bldg., 909 South Taylor Ave.

4 p.m. Dept. of Earth and Planetary Sciences Seminar, "The Interrelation of Crustal Thickening, Melting, Nappe Stacking, Inverted Metamorphism, and Uplift in the Development of a Crystalline Mountain Belt," Lincoln S. Hollister, professor, Princeton U. 102 Wilson.

4 p.m. Dept. of Philosophy Colloquium, "Combination and the Unity of Self," Jay Rosenberg, prof. of philosophy, U. of North Carolina. Hurst Lounge, Duncker Hall.

4 p.m. American Medical Student Association Lecture, "Asklepios, Apollo and Zeus: Health, Community and Government," Victor W. Sidel, Distinguished University Professor of Social Medicine, Montefiore Medical Center, Albert Einstein College of Medicine. Also sponsored by the Dept. of Preventive Medicine and Public Health. Erlanger Aud., 660 S. Euclid Ave.

4 p.m. Dept. of Chemistry Seminar, "Aspects of the Synthesis of Cyclooctanes and Cyclooctanoid Natural Products," Robert Gadwood, prof. of chemistry, Northwestern U. 311 McMillen.

Friday, Dec. 6

6 and 8:30 p.m. WU Association Film Travel Lecture Series, "Swiss on White," John Jay, filmmaker. Graham Chapel. For ticket info., call 889-5122.

Monday, Dec. 9

4 p.m. Dept. of Chemistry Seminar, "31P and 13C NMR Studies of Hepatic Metabolism: An Experimental Diabetes Model," Sheila M. Cohen, Merck Institute for Therapeutic Research. 311 McMillen.

4 p.m. Dept. of Biology Seminar, "Evolution of Human AIDS Viruses," Shozo Tokoyama, WU asst. prof. of genetics in psychiatry. 322 Rebstock.

Tuesday, Dec. 10

2 p.m. Center for the Study of Data Processing Symposium, "Competing with Computing," Bruce Rogon, of Nolan Norton & Co. Women's Bldg. Lounge.

4:15 p.m. School of Fine Arts Lecture with Edward Boccia, WU prof. of art, discussing his current exhibit of triptychs. Steinberg Aud.

Wednesday, Dec. 11

4 p.m. Dept. of Chemistry Seminar, "NMR Studies of Dynamics in Polymer Solutions," Frank Blum, prof. of chemistry, Drexel U. 311 McMillen.

4 p.m. Dept. of Physics Colloquium, "Impurities in Semiconductors," John D. Dow, dept. of physics, U. of Notre Dame. 204 Crow.

PERFORMANCES

Thursday, Dec. 5

8 p.m. Thyrsus Presents the student dance concert in Room 207 Mallinckrodt. (Also Dec. 6 and 7, same time, and 5 p.m. Dec. 8). Admission is \$2.



WU hosts the NCAA Division III national soccer championship at 1 p.m. Sunday, Dec. 8, at Francis Field. Above, WU goalie John Konsek makes a save.

Friday, Dec. 13

8 p.m. Guthrie Theater Presents Charles Dickens' "Great Expectations" at Edison Theatre. General admission is \$15; WU faculty, staff and senior citizens, \$10; and students, \$7. For more info., call 889-6543.

MUSIC

Saturday, Dec. 7

8 p.m. Dept. of Music Madrigal Christmas Concert directed by Orland Johnson. Holmes Lounge.

Monday, Dec. 9

8 p.m. Dept. of Music Piano Trio Concert with Seth Carlin, piano, WU assoc. prof. of music; Steven Balderston, cello, visiting artist; and Manuel Ramos, violin, visiting artist. Steinberg Aud.

Tuesday, Dec. 10

8 p.m. Dept. of Music WU Christmas Choir Concert. Graham Chapel.

Friday, Dec. 13

8 p.m. Dept. of Music WU Symphony Orchestra Concert directed by Seth Carlin, WU assoc. prof. of music. Holmes Lounge.

EXHIBITIONS

"Brothers Grimm: 200 Years." Through Dec. 16. Olin Library, level 3. Regular library hours.

"Literary and Historical Autographs: An Exhibit Drawn From WU Libraries' Autograph Collections." Through Dec. 7. Olin Library Special Collections, 5th level. 8:30 a.m.-5 p.m. weekdays.

"Images of Aristocrats and Republicans." Through Dec. 29. Gallery of Art, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Master of Fine Arts Thesis Exhibit," by artists Michael Rosenfeld and Lesa Unterbrink. Through Dec. 15. Bixby Gallery, Bixby Hall. 10 a.m.-4 p.m. weekdays; 1-5 p.m. weekends.

"Diversity in the Salon." Through Dec. 29. Gallery of Art, lower gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Photographs in the WU Collection." Through Dec. 29. Gallery of Art, print gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

"Edward Boccia: The Triptychs." Dec. 8 to Jan. 5. Gallery of Art, upper gallery. 10 a.m.-5 p.m. weekdays; 1-5 p.m. weekends. For more info., call 889-4523.

FILMS

Thursday, Dec. 5

7 and 8:45 p.m. WU Filmboard Series, "Yellow Submarine." \$2. Brown Hall.

Friday, Dec. 6

8 and 10 p.m. WU Filmboard Series, "Everything You Always Wanted to Know About Sex." \$2. Brown Hall. (Also Sat., Dec. 7, same times, and Sun., Dec. 8, at 7 p.m., Brown.)

Midnight. WU Filmboard Series, "Fritz the Cat." \$2. Brown Hall. (Also Sat., Dec. 7, same time, and Sun., Dec. 8, 9 p.m., Brown.)

Friday, Dec. 13

7 and 9:30 p.m. WU Filmboard Series, "A Clockwork Orange." \$2. Brown Hall. (Also Sat., Dec. 14, same times, and Sun., Dec. 15, at 7 p.m., Brown.)

Midnight. WU Filmboard Series, "Paper Chase." \$2. Brown Hall. (Also Sat., Dec. 14, same time, and Sun., Dec. 15, 9:30 p.m., Brown.)

SPORTS

Friday, Dec. 6

6 and 8 p.m. Men's Basketball, WU Lopata Classic featuring WU, Johns Hopkins, Claremont-Mudd-Scripps, and Trinity. Also Sat., Dec. 7. Field House.

Saturday, Dec. 7

2 p.m. Women's Basketball, WU vs. MacMurray College. Field House.

Sunday, Dec. 8

1 p.m. Soccer. NCAA Division III national championship. WU vs. University of North Carolina-Greensboro. Francis Field.

Concerts to raise holiday spirits

From the Madrigals' intimate candlelight serenade to the full WU Symphony Orchestra, the WU music department will serve up a variety of Christmas concerts and other musical events to raise the holiday spirit.

The Madrigals will present their annual Christmas Concert at 8 p.m. Saturday, Dec. 7, in Holmes Lounge. The concert features the 20-member chorus singing Christmas carols from classic centuries-old hymns to contemporary favorites. The Madrigals are directed by Orland Johnson, Ph.D., professor of music.

Seth Carlin, WU associate professor of music, and visiting artists Steven Balderston and Manuel Ramos will present "An Evening of Piano Trios" at 8 p.m. Monday, Dec. 9, in Steinberg Auditorium. Carlin will play piano; Balderston, cello; and Ramos, violin.

The concert will feature piano trios by Felix Mendelssohn, Albert Roussel and Johannes Brahms.

The WU Choir, directed by John-

MISCELLANY

Friday, Dec. 6

Noon. WU Woman's Club Mini-luncheon and Program. Lecture and slides by Mrs. Marlin Perkins. Women's Bldg. Lounge. Cost is \$2 for members and \$3 for guests of members. For reservations, call Amy Garfield, 726-0689.

Tuesday, Dec. 10

1-3 p.m. Personal Computing Education Center Short Course 002, "Computing Basics," Karen Sanders, computer specialist. Free to WU community. To register, call 889-5813.

7:30 p.m. B'nai B'rith Hillel Foundation Auction. Hillel House, 6300 Forsyth Blvd. Admission is \$2.50 a person or free with the purchase of a raffle ticket for a trip for two to Israel. For more info., call 726-6177.

Calendar Deadline

The deadline to submit items for the Jan. 16-25 calendar of the *Washington University Record* is Jan. 2. Items must be typed and state time, date, place, nature of event, sponsor and admission cost. Incomplete items will not be printed. If available, include speaker's name and identification and the title of the event; also include your name and telephone number. Address items to King McElroy, calendar editor, Box 1070.

son, will present a Christmas concert at 8 p.m. Tuesday, Dec. 10, in Graham Chapel. The concert will feature Dietrich Buxtehude's Christmas cantata and John Rutter's "Gloria."

The WU Symphony Orchestra, directed by Carlin, will perform at 8 p.m. Friday, Dec. 13, in Holmes Lounge. The concert will feature music by Heinrich Schutz, Samuel Barber, J.S. Bach and Ludwig von Beethoven.

This is Carlin's first year to direct the symphony, which has grown from a string ensemble to a full-size orchestra. Visiting artists Ramos and Balderston bolster the ensemble, leading the violin and cello sections.

The Dec. 13 program features soprano Gina Spagnoli. A doctoral candidate at WU, she is writing her dissertation on Heinrich Schutz, whose music she will perform.

Admission to all of these concerts is free. For more information, call 889-5581.